

Application No: 10/795,963
Amendment Dated: 26 December 2006

RECEIVED
CENTRAL FAX CENTER

DEC 26 2006

Amendments to the Claims

This listing of claims replaces all prior versions and listings of claims in this application.

1-39. (Cancelled)

40. (New) A method of aligning left and right stereoscopic images, the method comprising:
- capturing right stereoscopic image pixel information for a target object in a first array;
 - capturing left stereoscopic image pixel information for the target object in a second array;
 - calculating a first intersection position in the first array;
 - calculating a second intersection position in the second array;
 - selecting a portion of the first array and a portion of the second array such that the calculated intersection positions for each array substantially occupy the same position relative to the selected portions; and
 - outputting an aligned stereoscopic image to a viewer by displaying the selected portion of the first array and the selected portion of the second array.
41. (New) The method of claim 40, wherein the target object comprises an object at a surgical site on which a surgical procedure is performed.

Application No: 10/795,963
Amendment Dated: 26 December 2006

42. (New) The method of claim 40, wherein calculating the first intersection position comprises:
- for each of a plurality of rows in the first array, determining a first pixel column position that exceeds a row threshold value, a last pixel column position that exceeds the row threshold value, and a column position between the first pixel column position and the last pixel column position;
 - for each of a plurality of columns in the first array, determining a first pixel row position that exceeds a column threshold value, a last pixel row position that exceeds the column threshold value, and row position between the first pixel row position and the last pixel row position; and
 - determining a position at which a first line fitted to the column positions between the first pixel column positions and the last pixel column positions intersects a second line fitted to the row positions between the first pixel row positions and the last pixel row positions.
43. (New) The method of claim 42, wherein the column position between the first pixel column position and the last pixel column position is based on a mean value of pixel values between the first pixel column position and the last pixel column position.
44. (New) The method of claim 42, wherein:
- the plurality of rows comprises all rows in the array; or
 - the plurality of columns comprises all columns in the array; or
 - the plurality of rows comprises all rows in the array and the plurality of columns comprises all columns in the array.

Application No: 10/795,963
Amendment Dated: 26 December 2006

45. (New) The method of claim 42, wherein:

the column position between the first pixel column position and the last pixel column position is based on a mean value of pixel values between the first pixel column position and the last pixel column position; or

the row position between the first pixel row position and the last pixel row position is based on a mean value of pixel values between the first pixel row position and the last pixel row position; or

the column position between the first pixel column position and the last pixel column position is based on a mean value of pixel values between the first pixel column position and the last pixel column position, and the row position between the first pixel row position and the last pixel row position is based on a mean value of pixel values between the first pixel row position and the last pixel row position.

46. (New) The method of claim 40, wherein calculating a first intersection position comprises using a pattern matching template for the first array, and wherein the first array pixel information corresponds to an image of a surgical site.

47. (New) The method of claim 40, wherein the acts of capturing right stereoscopic image pixel information, capturing left stereoscopic image pixel information, calculating a first intersection position, calculating a second intersection position, selecting a portion of the first array and a portion of the second array, and outputting an aligned stereoscopic image are automatically repeated to compensate for stereoscopic image misalignment.

Application No: 10/795,963
Amendment Dated: 26 December 2006

48. (New) A method of aligning left and right stereoscopic images, the method comprising:
- capturing right stereoscopic image pixel information for a target object in a first array;
 - capturing left stereoscopic image pixel information for the target object in a second array;
 - calculating a first line position in the first array;
 - calculating a second line position in the second array;
 - selecting a portion of the first array and a portion of the second array such that the calculated line positions for each array substantially occupy the same position relative to the selected portions;
 - outputting an aligned stereoscopic image to a viewer by displaying the selected portion of the first array and the selected portion of the second array; and
 - maintaining a selected working distance of an endoscope used to capture the right and left stereoscopic image pixel information by automatically repeating the acts of capturing right stereoscopic image pixel information, capturing left stereoscopic image pixel information, calculating a first line position, calculating a second line position, selecting a portion of the first array and a portion of the second array, and outputting an aligned stereoscopic image.
49. (New) The method of claim 48, wherein the target object comprises an object at a surgical site on which a surgical procedure is performed.

Application No: 10/795,963
Amendment Dated: 26 December 2006

50. (New) The method of claim 48, wherein calculating the first line position comprises:

for each of a plurality of rows in the first array, determining a first pixel column position that exceeds a row threshold value, a last pixel column position that exceeds the row threshold value, and a column position between the first pixel column position and the last pixel column position; and

fitting the first line to the column positions between the first pixel column positions and the last pixel column positions.

51. (New) The method of claim 50, wherein the column position between the first pixel column position and the last pixel column position is based on a mean value of pixel values between the first pixel column position and the last pixel column position.

52. (New) The method of claim 50, wherein the plurality of rows comprises all rows in the array.

53. (New) The method of claim 48, wherein calculating a first line position comprises using a pattern matching template for the first array, and wherein the first array pixel information corresponds to an image of a surgical site.

Application No: 10/795,963
Amendment Dated: 26 December 2006

54. (New) An endoscopic imaging system comprising:

an image capture stage that captures right stereoscopic image pixel information for a target object in a first array and left stereoscopic image pixel information for the target object in a second array;

a video processing stage that

calculates a first intersection position in the first array and a second intersection position in the second array, and

selects a portion of the first array and a portion of the second array such that the calculated intersection positions for each array substantially occupy the same position relative to the selected portions; and

a monitor stage that outputs an aligned stereoscopic image to a viewer by displaying the selected portion of the first array and the selected portion of the second array.

55. (New) The system of claim 54, wherein the target object comprises an object at a surgical site on which a surgical procedure is performed.

Application No: 10/795,963
Amendment Dated: 26 December 2006

56. (New) The system of claim 54, wherein calculating the first intersection position comprises:

for each of a plurality of rows in the first array, determining a first pixel column position that exceeds a row threshold value, a last pixel column position that exceeds the row threshold value, and a column position between the first pixel column position and the last pixel column position;

for each of a plurality of columns in the first array, determining a first pixel row position that exceeds a column threshold value, a last pixel row position that exceeds the column threshold value, and row position between the first pixel row position and the last pixel row position; and

determining a position at which a first line fitted to the column positions between the first pixel column positions and the last pixel column positions intersects a second line fitted to the row positions between the first pixel row positions and the last pixel row positions.

57. (New) The system of claim 56, wherein the column position between the first pixel column position and the last pixel column position is based on a mean value of pixel values between the first pixel column position and the last pixel column position.

58. (New) The system of claim 56, wherein:

the plurality of rows comprises all rows in the array; or

the plurality of columns comprises all columns in the array; or

the plurality of rows comprises all rows in the array and the plurality of columns comprises all columns in the array.

Application No: 10/795,963
Amendment Dated: 26 December 2006

59. (New) The system of claim 56, wherein:

the column position between the first pixel column position and the last pixel column position is based on a mean value of pixel values between the first pixel column position and the last pixel column position; or

the row position between the first pixel row position and the last pixel row position is based on a mean value of pixel values between the first pixel row position and the last pixel row position; or

the column position between the first pixel column position and the last pixel column position is based on a mean value of pixel values between the first pixel column position and the last pixel column position and the row position between the first pixel row position and the last pixel row position is based on a mean value of pixel values between the first pixel row position and the last pixel row position.

60. (New) The system of claim 54, wherein calculating a first intersection position comprises using a pattern matching template for the first array, and wherein the first array pixel information corresponds to an image of a surgical site.

61. (New) The system of claim 54, wherein the acts of capturing right stereoscopic image pixel information, capturing left stereoscopic image pixel information, calculating a first intersection position, calculating a second intersection position, selecting a portion of the first array and a portion of the second array, and outputting an aligned stereoscopic image are automatically repeated to compensate for stereoscopic image misalignment.

Application No: 10/795,963
Amendment Dated: 26 December 2006

62. (New) The system of claim 54 further comprising an endoscope through which the right stereoscopic image and the left stereoscopic image are transmitted to the image capture stage.